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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/559,732

12/07/2005

Henrikh Rojanskiy

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EXAMINER

RIVELL, JOHN A

ART UNIT

PAPER NUMBER

3753

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/559,732	Applicant(s) ROJANSKIY ET AL.	
	Examiner JOHN RIVELL	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/07/05 (application).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09082006, 09252006</u> . | 6) <input type="checkbox"/> Other: _____ |

By preliminary amendment filed February 7, 2006, claim 16 has been canceled and new claims 20 has been added. Thus claims 1-15 and 17-20 are pending

The disclosure is objected to because of the following informalities: On page 7, line 22 recited “(inlet) port 16” whereas line 25 recites “outlet port 16”. Also lines 24-25 recites “cylinder passage 24” whereas line 25 recites “extension 24”. It is improper to utilize the same number for different elements. Appropriate correction is required.

Claims 20 and 17-19 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. Clearly, claim 20 by reciting dependence of two claims, namely claim 15 and claim 10, refers to other claims not in the alternative but in the inclusive. See MPEP § 608.01(n). Accordingly, the claims 17-20 have not been further treated on the merits. Claims 17-19 are included here because of their dependency ultimately on claim 20.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. §102 (b) as being anticipated by Locke (U. S. Pat. No. 173,653).

The patent to Locke discloses a “three-way two-position poppet valve (generally at F in each of the three figures) comprising a housing with a first port (at L), a second port (at A), a third working port (at C) and a generally cylindrical valve chamber (at Q, L) with an axis, said valve chamber being defined between a first coaxial annular valve

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seat (at the periphery of L) associated with said first port (L), and a second coaxial annular valve seat (at D) associated with said second port (D), said working port (C) being connected laterally to said valve chamber, said poppet valve (F) further comprising a poppet body (F) disposed in said valve chamber and adapted for reciprocation between two positions so that in a first position the poppet body (F) seals said first valve seat (L) and fluid communication is provided between said second port (A) and said working port (C), and in a second position the poppet body (F) seals said second valve seat (D) and fluid communication is provided between said first port (L) and said working port (C); wherein said housing has a first coaxial cylindrical passage adjacent said first valve seat (L) and a second coaxial cylindrical passage (that portion of the channel that is not seat D) adjacent said second valve seat (D), said poppet body (F) has a first (upper) coaxial cylinder part slidingly and sealingly fitting said first passage, and a second (lower) coaxial cylinder part slidingly and sealingly fitting said second passage, so that said poppet body (F) is always supported in at least one of the cylindrical passages and fluid communication between said first (L) and said second (A) ports is always prevented" as recited in claim 1.

Regarding claim 2, in Locke, "the two coaxial cylindrical passages and the two coaxial cylinder parts of the poppet body (F) have the same diameter D", i.e. they are equal in dimension, as recited.

Regarding claim 3, in Locke, "said second valve seat (D) is at a proximal end of said second cylindrical passage, adjacent said valve chamber (at P), and a proximal end of said second cylinder part of the poppet (F) is equipped with a second sealing rim

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(read at the periphery of the upper portion of valve F) matching said second valve seat (D)” as recited.

Regarding claim 4, in Locke, “said poppet body (F) further comprises a profiled part (at h) adjacent to the distal end (the opposite end) of said second cylinder part, so that said profiled part would smoothly change the flow through the second port (L) and the pressure in the valve chamber when entering or exiting said second cylinder passage” as recited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021).

The patent to Locke discloses all the claimed features with the exception of having a “profiled part (comprising) a shallow straight cylinder step adjacent to the distal end of said second cylinder part, said cylinder step having radial depth and axial length such that, after said second cylinder part leaves said second cylinder passage,

pressures in said second port and in said working port are equalized in a predetermined finite time for a given velocity of the poppet body axial movement”.

The patent to Grad discloses that it is known in the art to employ a “profiled part” comprising a “shallow straight cylinder step adjacent to the distal end of said second cylinder part, said cylinder step having radial depth and axial length such that, after said second cylinder part leaves said second cylinder passage, pressures in said second port and in said working port are equalized in a predetermined finite time for a given velocity of the poppet body axial movement” at groove 19 in piston valve 18 connecting the exhaust passage 3 to port 1.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Locke a “profiled part (comprising) a shallow straight cylinder step adjacent to the distal end of said second cylinder part, said cylinder step having radial depth and axial length” for the purpose of equalizing pressures in a predetermined finite time for a given velocity of fluid through the part passage as recognized by Grad.

Regarding claim 6, in the device of the combination, “said profiled part (at groove 19 taught by Grad) has a shape adapted to change flow section area of the second valve seat (when applied to the second valve seat of Locke) as a predetermined function of time for a given velocity of the poppet body axial movement” as recited.

Regarding claim 7, in the device of the combination, “said first valve seat (D of Locke) is at a distal end of said first cylindrical passage, adjacent said first port (A), and a distal end of said first cylinder part of the poppet (F) is equipped with a first sealing rim (read as the periphery of the poppet F) matching said first valve seat (D)” as recited.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021) as applied to claims 5-7 above, further in view of Cruse (U. S. Pat. No. 3,519,312).

The patent to Locke, as modified by Grad, discloses all the claimed features with the exception of having a passage including a “proximal part flaring towards said poppet body so that said first cylinder part of the poppet body would smoothly change the flow through the first port and the pressure in the valve chamber when entering or exiting said first cylinder passage”.

The patent to Cruse discloses that it is known in the art to employ a “flaring” part of the fluid passage at valve seat 23 which “flaring” smoothly changes the flow of fluid in cooperation with the valve element at seal 33.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Locke, as modified by Grad, a “profiled part” on the valve body at the desired valve seat for the purpose of smoothly changing flow through the flow path between the “profiled part” and the valve body F of Locke, as recognized by Cruse.

Regarding claim 9, in the device of the combination,, “said second port (A of Locke) is disposed laterally to said axis and said housing further comprises an auxiliary coaxial cylinder chamber (at Q) of diameter D communicating at a proximal end thereof with said second port (A) and said second cylindrical passage, and closed at a distal end thereof by a lid (the “lid” retaining seal R’), an auxiliary piston (N) being mounted for sliding in said auxiliary chamber and being firmly connected to said poppet body by an axial rod (O), so that the auxiliary piston (N), the axial rod (O) and the poppet body (F) form a poppet assembly which is axially (fluidly) balanced with respect to flow pressure in the second port (A)” as recited.

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021) and Cruse (U. S. Pat. No. 3,519,312) as applied to claims 8-9 above, further in view of Hollerith (U. S. Pat. No. 2,484,888).

The patent to Locke, as modified by Grad and Cruse, discloses all the claimed features with the exception of having “fluid communication” between a chamber formed between piston N and the “lid” and the port at L.

The patent to Hollerith discloses that it is known in the art to employ a pressure equalizing passage 62, fluidly communicating the outlet port at 56 with a fluid chamber formed between a “piston” read at the left end of valve 48 and the end of the chamber at the valve body 12 for the purpose of balancing fluid pressures on the valve element 48.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Locke, as modified by Grad and Cruse, a balancing passage in the valve body fluidly communicating the outlet port L with a chamber formed between the piston N and the “lid” for the purpose of balancing fluid pressure forces on the valve poppet F as recognized by Hollerith.

Regarding claim 11, in the device of the combination, “said axial rod (O of Locke) extends, with a sealing sliding fit, through an opening in said lid and is connectable to an external drive means for moving the poppet assembly between the two positions thereof” as recited.

Regarding claim 12, in the device of the combination, “said drive means is a hydraulic cylinder (as taught at operating cylinder 44 of Grad) connected to said rod” as recited.

Regarding claim 13, in the device of the combination, "said fluid communication is provided by an external pipe (at 62 of Hollerith) connecting said sealed volume to said first port" as recited.

Claims 10-12 are further, and claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021) and Cruse (U. S. Pat. No. 3,519,312) as applied to claims 8-9 above, further in view of Peters (U. S. Pat. No. 2,897,836).

The patent to Locke, as modified by Grad and Cruse, discloses all the claimed features with the exception of having "fluid communication" between a chamber formed between piston N and the "lid" and the port at L.

The patent to Peters discloses that it is known in the art to employ a pressure equalizing passage 109, fluidly communicating the outlet port at 63 with a fluid chamber 99 formed between a piston at 98 and the end of the chamber at 104 for the purpose of balancing fluid pressures on the valve element 88.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Locke, as modified by Grad and Cruse, a balancing passage in the valve poppet fluidly communicating the outlet port L with a chamber formed between the piston N and the "lid" for the purpose of balancing fluid pressure forces on the valve poppet F as recognized by Peters.

Regarding claim 11, in the device of the combination, "said axial rod (O of Locke) extends, with a sealing sliding fit, through an opening in said lid and is connectable to an external drive means for moving the poppet assembly between the two positions thereof" as recited.

Regarding claim 12, in the device of the combination, "said drive means is a hydraulic cylinder (as taught at operating cylinder 44 of Grad) connected to said rod" as recited.

Regarding claim 14, in the device of the combination, "said fluid communication is provided by a channel obtained through said axial rod" as taught at 109 of Peters.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021), Cruse (U. S. Pat. No. 3,519,312) and Hollerith (U. S. Pat. No. 2,484,888) as applied to claims 10-13 above or as being unpatentable over Locke (U. S. Pat. No. 173,653) in view of Grad (U. S. Pat. No. 2,973,021), Cruse (U. S. Pat. No. 3,519,312) and Peters (U. S. Pat. No. 2,897,836) as applied to claims 10-12 and 14 above, further in view of Tonner (U. S. Pat. No. 5,306,428 cited by applicant).

The patent to Locke as modified by Grad, Cruse and Hollerith or Locke as modified by Grad, Cruse and Peters discloses all the claimed features with the exception of having utility in combination with a "work exchanger" including a cylinder and reciprocating piston therein receiving separate fluids on opposite sides of the piston to exchange pressure from one fluid to the other.

The patent to Tonner discloses that it is known in the art to employ a supply and exhaust type valve device at 7 connected to the outlet port of a "work exchanger" exchanging fluid pressure between separate fluids applied at the opposite ends of the exchanger and separated by a reciprocating piston in the cylinder for the purpose of exchanging pressure between the separate fluids received within opposite ends of the exchanger 7.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ the supply and exhaust valve of Locke, as

modified by Grad, Cruse, and Hollerith or as modified by Cruse, Grad and Peters, as a control valve controlling the flow of fluid into one end of a work exchanger comprising a cylinder and reciprocating piston receiving separate fluids at opposite ends of the cylinder for the purpose of exchanging pressure between the separate fluids as recognized by Tonner.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN RIVELL whose telephone number is (571)272-4918. The examiner can normally be reached on Mon.-Fri. from 6:00am-2:30pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Huson can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/John Rivell/
John Rivell
Primary Examiner
Art Unit 3753**

j.r.